Water

Objective:

1. Students will be able to identify the basic properties of Earth with a focus on water.
2. Students will be able to explain the common uses of water and the water cycle.
3. Students will demonstrate and understanding of water conservation.
4. Student will be able to classify changes in water by the observable properties.

Performance Objectives:

Grade 1: Strand 6: Concept 1 – PO 1-5
NGSS: 1-LS-1-A
Grade 2: Strand 1: Concept 1 – PO 2; Strand 5: Concept 1 – PO 2-4
NGSS: 2-ESS2-C

Grades 1 – 2

Key Vocabulary:

- **Precipitation**
- **Condensation**
- **Vapor**
- **Evaporation**
- **Pollution**

Related Literature:

Why Should I Save Water?
Mike Gorjon
Saving Water
Emmaline Marvig
Splish, Splash
Penny Warner

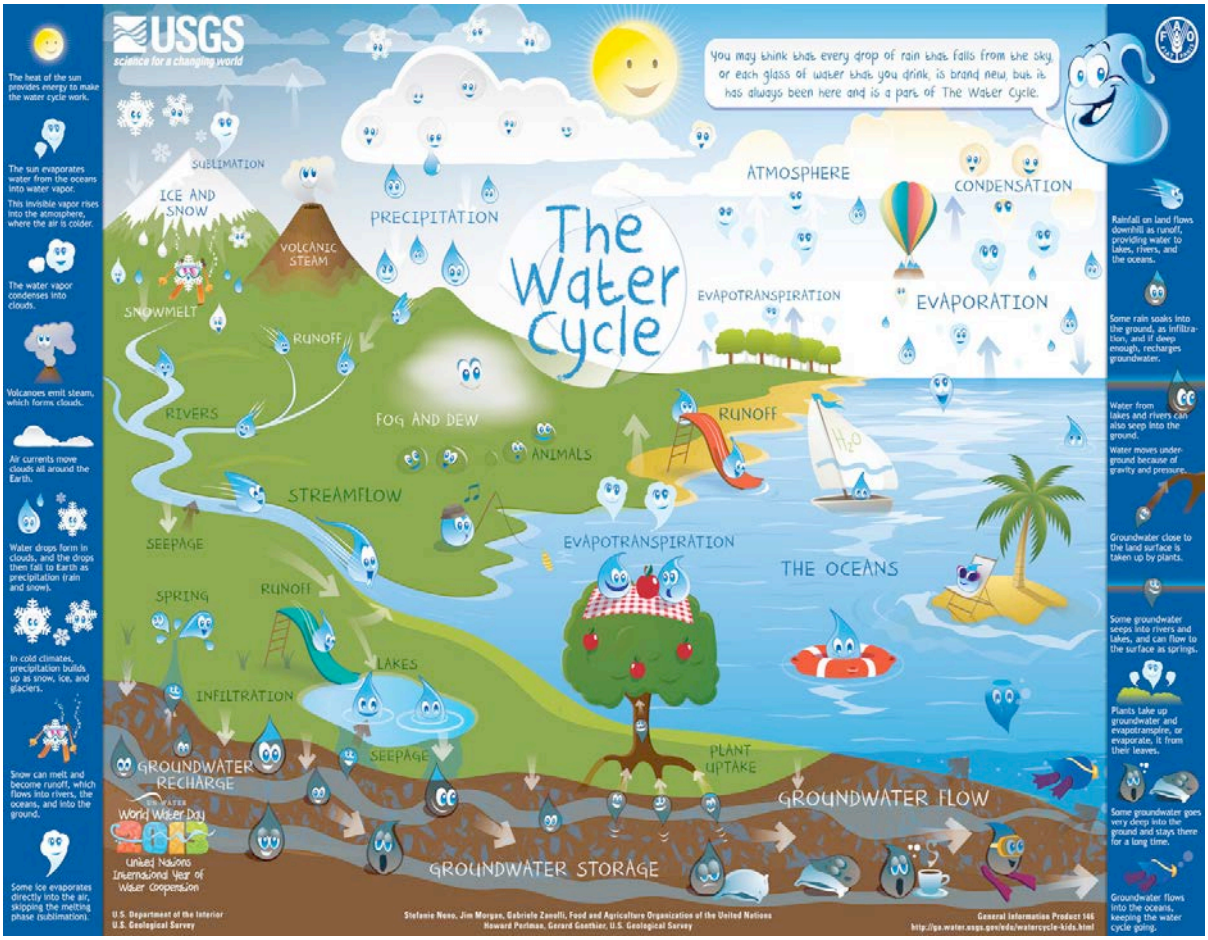
Background Information:

Water is one of the most valuable and common resources on Earth. Almost the entire Earth's surface is covered with water, and life on the planet would not be around without it. (Draw a globe and show how much of it will be filled with water) Think of all the ways we use water. Humans and most animal need water to survive, and saving water has become something we all need to think about. What exactly is water and where do we get it? Water is found in three different forms, liquid, solid and gas. Can you tell me what a solid is? A liquid? A gas? The liquid form is referred to as water, the solid form of water is called ice, and the gas form of water is called steam or **vapor**. Scientists have found that most of the water on Earth is saltwater not freshwater and a small amount of Earth's water is frozen in glaciers. Pure water has no smell or taste. Living creatures depend on water and it is essential to life on Earth.

Water on Earth is constantly moving. The water cycle shows how water moves around the earth changing from one form to another as it passes through the cycle. Rain is water, clouds have water in them, and lakes and rivers are filled with water. The water cycle is the path water takes as it moves around the Earth. A single drop of water is very important to all the water on the planet.

Constantly changing from liquid to vapor to ice, water tells a story of life on Earth. Beginning with the ocean, a drop of water can be followed in the water cycle. Imagine a sunny day on the beach as you look over the ocean. You can't see it, but the water cycle is in full motion. A single drop of water at the ocean's surface is heated by the sun and the process of **evaporation** begins. The drop becomes water vapor (gas) and rises into the air. Winds carry the vapor higher into the sky where the air is cool. As the vapor droplet gets cooler, it changes back into a liquid, this is called **condensation**. The vapor can condense and get cool enough that it joins other droplets of liquid water and becomes part of a cloud. Soon that single drop of water from the ocean, joining others in the same way, will become bigger droplets and fall to the earth as rain. The process is called **precipitation**; the rain drops may fall in various places. For example, rain falls back to the ocean, or it may fall on dry parts of land and soak into the ground. Rain may fall in rivers or lakes to refill them, or streams to allow them to flow faster. Rain may make a puddle in the street or fill a canal. Just think of all the places rain can fall and how it can change the landscape. The **collection** or storage of water is also a part of the water cycle. From the areas of collection such as lakes or underground areas, the water cycle begins again. The USGS chart shows how water moves all around us, day and night, to provide fresh water for drinking and other uses.

The Water Cycle Chart



USGS Water Cycle

Plants help the water cycle too. They give water a way to move from the ground up through their leaves and back to the air. Plants use water to make oxygen or the air we breathe. Water is called a natural resource because is important to all life.

Keeping and saving water is called **conservation**. It is important that we use water wisely so we do not waste it. If water is wasted there may not be enough for others who need it. Can you think of ways you can save water each day?

Scientists are working hard to find ways to keep water safe and clean. One way is to be sure chemicals, and other types of pollution are kept out of the water. Do you know what pollution is? Trash, oil, tires, and other things that are dumped or thrown into the water can cause water pollution. When water is

polluted it means that the water is no longer safe to drink or use in homes. Pollution in water affects an animal's ability to live in the water.

Procedures and Activities:

 **Indicates 'take along' activity.**

Activity: Pre fieldtrip activity - Begin with a discussion about how we use water each day. Students give examples of how water is used in the home, at school and in an aquarium. Discuss the concept of water conservation. Students use the 'We use water for…' sheet to capture some of the ways they use water and begin thinking about how to save water.

Activity: In understanding the water cycle, students are given the handout, 'Make a water cycle,' and start by coloring each part. The three parts and the words are cut out and students arrange and glue them on a piece of construction paper. Students draw arrows or lines to demonstrate the water cycle. Materials: construction paper, glue sticks, handouts, and crayons.

Activity: Discuss the changes in water related to liquid, solid and gas. Ask students to give examples of where these forms may be seen. (Ice caps, rain, lakes, steam or fog, etc.) Clarify the terms 'gas' and 'vapor' related to water. "What kind of water is it?" This activity offers students an opportunity to identify the basic properties of water, liquid, solid and gas (vapor).

Activity: Students continue their knowledge of the water cycle by writing a story about a drop of water. The story begins with a drop of water falling to earth. Using the activity, 'A Drop of Water Fairytale' students complete the fairytale and draw a picture of their story.

 **Activity:** While visiting OdySea Aquarium, read the paragraph at the top of the escalator and fill in the blanks on the worksheet "Your Journey as a Drop of Water". Students can then write down their favorite animals as they continue their journey through the aquarium organized by "River Animals", "Shoreline Animals" and "Ocean Animals". After the field trip, students can make up a fairytale as if they were a drop of water meeting all of the animals they saw on the field trip.

Reflections and Assessments: Students are assessed on various levels depending on the activity. Participation, grade standards, and percentages may be applied to each activity. Activities are designed for flexibility and use pre or post fieldtrips.

Depending on the level of instruction prior to the field trip, many activities may be used as a pre-visit or as a follow-up to the visit.

Many activities meet the **STEM** education guidelines.

We Use Water For….

We use water for

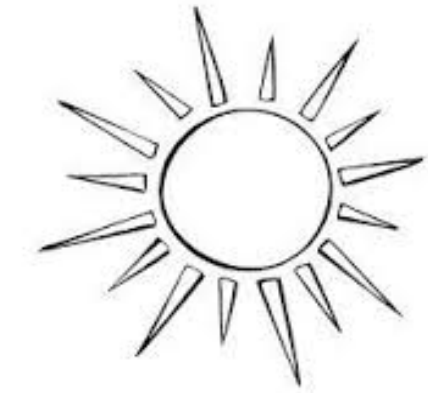
1. _____
2. _____
3. _____
4. _____
5. _____

How can we save our water?

1. _____
2. _____

_____

Make a Water Cycle



Condensation

Precipitation

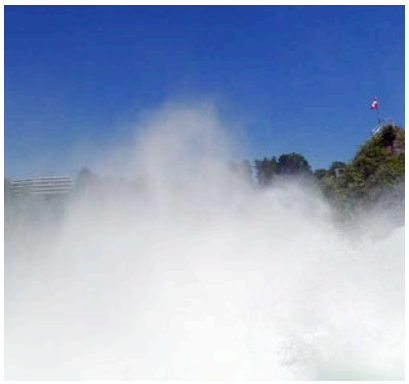
Evaporation

What kind of water is it?

Write the form of water next to the picture: **Solid, Liquid, Vapor**

1. _____ 

2. _____

3. _____ 

Your Journey as a Drop of Water

At OdySea Aquarium, read the paragraph at the top of the escalator and fill in the blanks:

"Your journey follows

a drop of _____...

As it falls from the _____

and gently flows

into _____ and _____,

winding its way

to the _____ and

down to the vast _____.

River Animals:

_____

_____

Shoreline Animals:

_____

_____

Ocean Animals:

_____

_____

Your Journey as a Drop of Water Story

After visiting OdySea Aquarium, reference the "Your Journey as a Drop of Water" worksheet. Using the river, shoreline and ocean animals you saw on your field trip, write a story about your journey as a drop of water and how you met your favorite animals.

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